U.S. DEPARTMENT OF ENERGY

OFFICE OF OCCUPATIONAL MEDICINE
AND MEDICAL SURVEILLANCE
(EH-61)

1999

ANNUAL REPORT

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Message from the Director

Health Reporting and the Integrated Safety Management (ISM) System

We have seen many changes within the Department of Energy (DOE) complex since the end of the Cold War, and I spoke of them in last year's message. The hazards that workers encounter in site cleanup operations are numerous and many may be uncharacterized. To meet this challenge, DOE has taken steps, through its Integrated Safety Management (ISM) system, to strengthen its commitment to a safe workplace. The effectiveness of ISM is now tracked through the number and type of accident and incident reports generated by the Computerized Accident/Incident Reporting System (CAIRS) and Occurrence Reporting and Processing System (ORPS) databases. While we know a great deal about worker safety from CAIRS and ORPS, the present feedback falls short by not giving us the information we need regarding our level of worker health protection. Can we say, for instance, that on a day-to-day basis, our current workers are getting adequate protection and not suffering health effects as a result of their work? At our site clinics, we assess worker fitness for duty and monitor workers for known exposures, and each encounter is recorded in the worker's medical chart; yet this information is rarely used to develop a holistic picture of the overall health of our workforce as is envisioned under ISM.

DOE has a golden opportunity to collect and analyze this information in a deidentified form. By tracking worker groups by health outcomes; e.g., blood lead levels of our lead-exposed; the liver function of workers exposed to solvents; the pulmonary function of our welders, cutters and burners, we can learn where we are doing a good job in protecting worker health and where we need to improve. In short, when we monitor our workers' health for job-related effects and act upon this information to improve health protection, we can demonstrate to our workers, DOE management, stakeholders, and the public that we are serious about worker health protection and that our ISM works not only for worker safety, but also for worker health.

Executive Summary

The major accomplishments made in 1999 are listed below. For more extensive details about our activities, please refer to the corresponding section under program accomplishments.

- Improved Worker Protection Programs by assisting the operating elements of the Department in implementing the new beryllium worker medical surveillance requirements of DOE directives. Assistance focused on helping site occupational medicine programs obtain specialized testing and clinical services and establishing routine analysis of health and clinical data. This effort will continue during 2000. (see page 3)

- Via a grant to the State of Alaska, initiated the Amchitka Workers Medical Screening Program (AWMSP). This project will screen former DOE and contractor workers who worked at Amchitka from the middle 1960's through the early 1970's on projects supporting the underground nuclear testing program. The addition of the Amchitka project brings the total number of S-3162 related projects to 11. Ten of those pilots, initiated in 1996 and 1997, are operating at 9 DOE sites. (see pages 4-5)

- Developed health-related policies, requirements, and guidance to promote the health of the contractor workforce. (see pages 6-8)

- Enhanced DOE's Medical Surveillance efforts by linking the Medical Surveillance Information System (MSIS) to the Y-12 Plant (Y-12). We expect Y-12 and East Tennessee Technology Park (ETTP) to begin sending health outcome data to the MSIS in fiscal year (FY) 2000. (see page 8)

- Improved Worker Health Risk Communication by disseminating the previously developed model worker risk communication program for beryllium workers. In 1999, the worker communication program continued to develop materials for communication about beryllium risks with various audiences. In addition, education and outreach activities in risk communication were expanded. (see page 9)

- Provided Internet-based information about EH-61 activities to customers, stakeholders, and colleagues through the EH-61 Website: *http://www.eh.doe.gov/med*, and the FWP Website: *http://www.eh.doe.gov/workers*. (see page 10)

Program Accomplishments

Surveillance

EH-61 manages a comprehensive medical surveillance program for former DOE workers with significant chemical or radiation exposures and whose employment at DOE facilities may have placed their long-term health at risk. The program identifies, locates, and medically evaluates current and former DOE and DOE contractor employees who are subject to significant health risks as a result of exposure to hazardous or radioactive substances during employment. This program has three components, which are described below.

The BERYLLIUM WORKER MEDICAL SURVEILLANCE PROGRAM identifies and locates former workers exposed to beryllium and provides enhanced medical monitoring for early identification of chronic beryllium disease (CBD). It also provides diagnostic examinations and characterizes the work history of individuals who have CBD or sensitization to beryllium. During FY 1999, the program was expanded and restructured to include all DOE workers at risk for CBD. As part of the restructuring, responsibility for surveillance of current employees was shifted to site clinics. The EH-61 operated program changed its focus from current and former employees of two facilities, Oak Ridge Y-12 Plant and the Rocky Flats Environmental Technology Site, to a complex-wide program aimed at all former DOE beryllium workers. Former employee surveillance has begun at 12 additional sites:

Ames Laboratory
Argonne National Laboratory
Brookhaven National Laboratory (BNL)
Fermi National Accelerator
Kansas City Plant
Knolls Atomic Power Laboratory
Lawrence Berkeley National Laboratory
Lawrence Livermore National Laboratory
Oak Ridge National Laboratory (ORNL)
Pantex Plant
Sandia National Laboratories

The medical services provided by this program are also being used by the former worker pilot programs that are operating at five additional sites. They are as follows:

East Tennessee Technology Park (ETTP)
Hanford Environmental Health Foundation
Idaho National Engineering and Environmental Laboratory
Los Alamos National Laboratory
Savannah River Site

Program Accomplishments - Surveillance (cont'd)

We now have the ability to offer a screening medical examination to any current beryllium worker through site clinics or to former DOE beryllium workers interested in voluntary participation in the program. The program is now delivering about 300 screening medical examinations for CBD per month. EH-61 is the primary focus for the collection, analysis, and dissemination of data and information from this program.

Small research and development projects are being supported to help improve the effectiveness of the program. EH-61 is supporting development of the flow cytometry-based lymphocyte proliferation test (called the immuno-LPT) in screening for CBD.

Additionally, we sponsor:

- ORNL's Statistical Support for Lymphocyte Proliferation Testing (LPT);

- The Committee to Accredit Beryllium Sensitivity Testing Laboratories (CABST) efforts to standardize LPT methods; and

- The Oak Ridge Institute for Science and Education in the epidemiologic analysis of CBD incidence and risk factors among Y-12 workers. More information can also be found at: *http://www.eh.doe.gov/MED/commbe/*.

The FORMER DOE WORKERS MEDICAL SURVEILLANCE PROGRAM (FWP) was initiated in 1996. Ten pilots are operating in Phase II at 9 sites. This pilot program complements existing medical surveillance activities at these DOE contractor facilities, but it is primarily targeted to former workers who have retired and left DOE facilities. In addition to the medical screening of former employees, this program also provides the basis for a robust health risk communication effort. More information about the FWP can be found at: *http://www.eh.doe.gov/workers*.

- Via a grant to the State of Alaska, the Amchitka Workers Medical Screening Program (AWMSP) was started. Many Alaskans who worked at Amchitka from the middle 1960's through the early 1970's on projects supporting the underground nuclear testing program have expressed concerns about health effects related to their work. The State of Alaska and DOE have agreed that a medical monitoring program for these workers is appropriate and, therefore, the AWMSP is being funded by DOE through an existing Agreement in Principle. The Alaska Council of Labor will direct this voluntary program. The purpose of the screening program is to locate and provide medical screening targeted at occupational risks for workers who were employed at Amchitka during the time that the U.S. Federal Government maintained a nuclear testing facility on the Island, beginning in approximately 1963. Of the

Program Accomplishments - Surveillance (cont'd)

  2000 plus workers employed at Amchitka during this period, it is estimated that some 1500 will be located and screened.

- During 2000, we anticipate the addition of at least one additional former worker program. DOE has committed to a project at Middletown, Iowa, at the site of the Iowa

Army Ammunition Plant, which was utilized by DOE for nuclear weapons assembly through 1974.

FORMER WORKER PROGRAM AT A GLANCE

SITE/WORKERS[1]	PRINCIPAL INVESTIGATOR[2] (PI)	BEGIN DATE	END DATE	ESTIMATED # OF WORKERS TO BE SCREENED[3]
Hanford (Washington) Construction	Knut Ringen, DrPH	10/96	9/01	1800
Hanford Production	Drew Brodkin, MD Co-PI, Tim Takaro, MD	10/96	5/02	1800
Nevada Test Site Tunnel Workers	Lew Pepper, MD Co-PI, Robert Harrison, MD	10/96	12/01	2200
Oak Ridge Construction	Eula Bingham, PhD	10/96	3/02	1300
Gas Diffusion Plants: Oak Ridge, Paducah & Portsmouth	Robert Wages Co-PI, Steve Markowitz, MD, MPH	10/96	2/02	3600
Rocky Flats (Colorado)	James Ruttenber, MD, PhD	10/96	6/02	1800
INEEL (Idaho) Production	Robert Wages Co-PI, Steve Markowitz, MD, MPH	10/97	6/03	3500
Los Alamos (New Mexico)	Brian Schwartz, MD, MS Co-PI, Pat Breysee, PhD	12/97	7/03	2000
Savannah River Construction (South Carolina)	Knut Ringen, DrPH	10/97	9/02	1800
Savannah River Production	David Hoel, PhD Co-PI, David Adcock, MD	10/97	6/03	1800
Amchitka	Knut Ringen, DrPH	10/99	9/02	1000
Burlington, Iowa	TBD	TBD	TBD	TBD

Program Accomplishments - Policy/Guidance

The FORMER RADIATION WORKER MEDICAL MONITORING PROGRAM provides health monitoring followup for Rocky Flats Plant retired and separated employees whose lifetime effective dose equivalent occupational exposure exceeds 20 rem. The program identifies, locates, and maintains a roster of former employees who qualify for participation. It collects a health and work history for each participant, and program physicians report the signs and symptoms of illness to the participant for diagnosis and treatment by their personal physicians. Descriptive epidemiologic analyses will be performed to investigate

[1] The Former Worker Projects are being carried out via cooperative agreements with the Department of Energy. Most are partnerships of labor unions, universities and other interested parties. The two exceptions, Savannah River Production and Hanford Production, are carried out by universities.
[2] PI - The person responsible for that project.
[3] ESTIMATED # OF WORKERS TO BE SCREENED are best estimates based upon experience to date. These numbers will be updated as PHASE II continues.

whether the health events detected are work related. Approximately 800 eligible current and former workers have been notified and approximately 500 of those workers have been examined. Another goal of the program is to refine mathematical models used to calculate internal radiation doses from bioassay and chest counting results. Current models are based on measurements made shortly after suspected intakes. Chest counting and bioassay results from participants in this program provide a basis for correcting dose estimates when measurements are made years after the intake.

Policy and Guidance

Policy

EH-61 establishes complex-wide policies for the delivery of quality occupational medicine services. Accomplishments during 1999 include:

EH-61 has revised the OCCUPATIONAL MEDICINE ORDER, DOE O 440.1A, Chapter 19, "Contractor Occupational Medicine Program," to satisfy Secretarial objectives regarding information to be provided to workers regarding medical testing, testing results, and informed consent. With this Order update, DOE will require a Worker Bill of Rights to be adopted and displayed in all DOE contract occupational medicine clinics. The Order has completed the DOE-wide review and comment process, and we anticipate the revised Order to be published DOE-wide during 2000.

The MEDICAL AND PSYCHOLOGICAL STANDARDS FOR PROTECTIVE FORCE PERSONNEL are being revised. These requirements are interpretive guidance for the medical requirements of 10 Code of Federal Regulations (CFR) 1046, "The Physical Protection of Security Interests," and DOE 5632.7, "Protective Forces," and comply with the Americans with Disabilities Act (ADA). They are being incorporated into 10 CFR 1046. DOE's Office of Safeguards and Security has the lead in this endeavor.

Program Accomplishments - Policy/Guidance (cont'd)

A DOE policy directive and guide for VIOLENCE IN THE WORKPLACE was developed in collaboration with the Office of Worker Health and Safety and focused on preventing acts of aggression, threatening behavior, and violence within all DOE work sites. Included in these documents were requirements and guidance on policy development and guidance on establishing a site plan, organizational involvement, implementation, and training for all DOE employees.

10 CFR part 711 was published for the PERSONNEL ASSURANCE PROGRAM (PAP) medical and psychological standards and became effective on October 8, 1998. Currently, the Office of Defense Programs is in the process of combining PAP and the Personnel Security Assurance Program and has asked EH-61 to ensure a smooth integration of the medical and psychological aspects of both programs.

Guidance

EH-61 is the only resource for occupational medicine guidance within DOE. We provide products and services that facilitate the transfer and sharing of technical expertise. This includes (1) assistance to operations offices by reviewing occupational medicine programs for quality, appropriate products and services and occupational medicine and nursing expertise; (2) assistance with accident/incident investigations and waiver determinations for Safeguards and Security personnel; and (3) policy interpretations, guidance, and consultation to various customers, from members of the public, DOE and contractor personnel, and Congress.

The RADIATION EMERGENCY ASSISTANCE CENTER/TRAINING SITE (REAC/TS) Program continues to assist DOE by maintaining state-of-the-art, standby emergency expertise in radiation medicine and biodosimetry. It provides DOE with a national and international 24-hour response capability for evaluating and managing victims of radiation accidents that occur at their facilities or among the public.

REAC/TS also manages the U.S. Radiation Accident Registry for DOE's Office of Environment, Safety and Health. REAC/TS staff recently utilized data from this Registry to provide early medical response for the Japanese criticality accident in Tokai-mura. During October 1999, REAC/TS senior staff was in constant contact with physicians treating these individuals, and clinical consults were offered on several occasions.

The DTPA (diethylenetriaminepentaacetic acid) chelation therapy Accident Registry at REAC/TS is still quite active with 45 co-investigators. Since the beginning of the registry, 622 patients have been treated with 4,535 doses of DTPA, mostly in the DOE

Program Accomplishments – Information/Communication

complex. A Prussian Blue Registry has also been started, and four national laboratories have requested a supply of this drug in the event of a serious accident involving radiocesium. Following the Food and Drug Administration's (FDA) approval, REAC/TS has now imported a new stock of DTPA from Heyl in Berlin. Starting in the spring of FY 1999, the new stock of DTPA was rotated out to all DOE sites, along with updated package inserts and a new patient consent form.

EH-61 continues to provide QUALITY ASSURANCE OF CONTRACTOR MEDICAL X-RAY FACILITIES by FDA quality experts via a Memorandum of Understanding with FDA as an ongoing service to our DOE contractor occupational medicine programs.

Information and Communication

Information related to worker health is vital in providing outstanding occupational medicine services within the Department. The following are products and actions that facilitate the interchange of quality occupational medicine information to meet the needs of our customers.

The purpose of the MEDICAL SURVEILLANCE INFORMATION SYSTEM (MSIS) is to provide DOE with a way of determining the degree of health protection provided for our workers by providing clinical performance indicators. The MSIS program objective is to collect de-identified clinical information from each site and convert it into a relational form, allowing complex queries leading to well-defined subsets. Relational software permits nurses, physicians, or line managers to ask complex questions about the various components of a site's workforce. For instance, the manager of a wellness program at site Y is targeting those at risk for heart disease for intervention and wants to know if there are enough people at the site for a program to be cost-effective. Data analysis for specific queries, such as blood-lead levels, may be site-specific or Department-wide. Such information can be used by the occupational medicine physician, the epidemiologist, and DOE management to safeguard the health of the workers by identifying the health effects of exposures that lead to effective exposure risk management.

The MSIS was completed in the spring of 1997. In December 1998, the electronic interface to the Y-12 facility was completed. In FY 2000, as Y2K problems resolve, we expect resources once again to be allocated and Y-12 to be fully linked with the MSIS. With the ETTP using the same internal software as Y-12, the Y-12 and ETTP links can become fully operational in FY 2000.

Program Accomplishments - Information/Communication (cont'd)

The goal of the WORKER HEALTH RISK COMMUNICATION PROGRAM is to develop a model for health risk communication that integrates current knowledge of effective risk communication practices into a framework for dialog about workplace health risks that is acceptable to current workers, retired workers, health professionals, and others. A health-risk communications and training package, "Communicating Health Risks: Working Safely with Beryllium," was completed in a collaborative project with the Office of Defense Programs (DP) and the Office of Environmental Management (EM) and is being utilized by the complex. This information can also be found at: *http://www.eh.doe.gov/MED/commbe/*.

In 1999, the worker communication program continued to develop materials for communication about beryllium risks with various audiences. These materials include a video that introduces workers, workers' families, and others to the health risks of beryllium, a series of brochures for diverse audiences, and a medical seminar to introduce personal physicians to CBD (Beryllium Worker Communication).

THE EDUCATION AND OUTREACH IN HEALTH RISK COMMUNICATION PROGRAM surveyed DOE facility occupational medical departments and clinics to obtain the views of health professionals about their highest priority needs for better resources to use in communicating with facility employees. Recommendations on materials the clinics have found to be effective in their communication efforts were also obtained. The greatest needs identified by the respondents were: (1) better documents and processes in medical informed consent and providing workers with information on the health risks of specific

jobs; and (2) better explanations of the content and management of workers' medical records.

The DOE Office of Occupational Medicine and Medical Surveillance held its annual DOE CONTRACTOR OCCUPATIONAL MEDICINE CONFERENCE on July 19-22, 1999, in Albuquerque, New Mexico. The meeting focused principally on the state of occupational medicine at New Mexico's two DOE National Laboratories: Los Alamos and Sandia National Laboratories. It provided an overview of the new advanced technologies developed at these two National Laboratories and allowed participants to assess how these technologies could better serve DOE workers and national health concerns. In addition, there were a number of special presentations on themes of overall importance to worker health protection at DOE. Over 110 people attended the meeting, which was fully accredited for category 1 Continuing Medical Education (CME) Credits for physicians, Continuing Education Credits for nurses and Certification Maintenance Points for Industrial Hygienists. Up to 18 credits were provided for occupational physicians and nurses.

Program Accomplishments - Colleagues

In support of the Secretary's commitment regarding PREPLACEMENT and PERIODIC MEDICAL TESTING PROCEDURES AT DOE SITES, two tables summarizing these medical testing activities have been created. The current information can be found on the EH-61 website at the following addresses: *www.eh.doe.gov/med/docs/pre.htm* and *http://tis.eh.doe.gov/med/docs/periodic.htm*. The information is updated during the last quarter of each calendar year.

Internet-based information was provided to our customers and stakeholders through the EH-61 [*http://www.eh.doe.gov/MED/*] and FWP [*http://www.eh.doe.gov/workers/*] WEBSITES. Comments received from former workers, via an electronic comment form on the FWP site, has enabled the office to respond to individual needs in a more timely fashion. In addition to this and as mentioned above, testing procedure information is kept up to date and is readily available.

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